APPENDIX G

BACKGROUND INFORMATION ON POTENTIAL NATURAL VEGETATIVE COMMUNITIES

The AFO has chosen the achievement of Potential Natural Communities (PNCs) as one of its vegetative goals for the Plan Area (see Chapter 2). Background information on the PNCs is briefly described below.

Vegetative Communities

Soils in the Plan Area are described in the *Cibola Area Soil Survey* completed by the Soil Conservation Service, now the Natural Resources Conservation Service (USDA, SCS 1993). Areas with similar soil classification characteristics (e.g., depth, texture, source materials) are grouped as "soil map units" in the soil survey.

The soil survey further categorizes the soil map units into "ecological sites." An ecological site is an area of rangeland with a specific potential natural vegetative community which differs from other kinds of rangeland in its ability to produce a unique mixture of vegetative species and respond to management techniques (BLM Technical Reference 4400-4). In other words, an ecological site is an area that has the potential to produce a unique vegetative community.

The ecological sites presented in the *Cibola Area Soil Survey* have been grouped into four different vegetative communities–Grass-Shrub, Piñon-Juniper, Ponderosa Pine, and Lava Complex (USDA, SCS 1993). These groupings of ecological sites present the optimum or potential areal extent of these four vegetative communities. Three of the communities contain a mixture of vegetation, but are named for the predominant plant species. In contrast, the Lava Complex consists primarily of various types of rock and is named accordingly; it supports some vegetation on older flows where soils have formed.

A vegetative community usually occurs in a distinct area of the landscape. The natural range or limit of occurrence for each community varies depending on soils, climate, topography, aspect, slope, and elevation. The communities compete with each other for space, sunlight, moisture, and nutrients. Changes in climatic conditions and disturbances such as fire and livestock grazing can favor one species over another, altering the mix of species to the extent that one vegetative community may displace all or part of another community. Human use can make significant contributions to shifts in vegetative communities.

A comparison of the areal extent of the potential vegetative communities with the existing vegetative communities allows location of areas where current vegetation is different from the potential vegetative communities. The *Cibola Area Soil Survey* provided the information for mapping the four potential vegetative communities within the Plan Area.

The AFO delineated the current vegetative communities in the Plan Area based on satellite remote sensing data gathered in 1994. Using Geographic Information Systems (GIS) computer capabilities, data on the Plan Area's existing soils, vegetation, landforms, and drainage patterns were compared and grouped to map distinct and unique areas referred to as Biophysical Land Units (BLUs). From the vegetation layer of the BLU data, four vegetative classes–Grass-Shrub, Piñon-Juniper, Ponderosa Pine, and Lava Complex were derived and mapped.

The AFO also used GIS to compare the potential communities from the *Cibola Area Soil Survey* with the BLU vegetative classes. The results of the comparison are shown on Table G-1. The table indicates the disparity between the potential vegetative communities and the existing vegetative communities. From these comparisons, areas of concern or interest were identified for further evaluation. For example, the area determined to have a Grass-Shrub PNC contains a higher acreage of piñon-juniper than expected, and the area with a Ponderosa Pine PNC is instead dominated by piñon-juniper. These differences are believed to be the result of past tree harvesting, grazing practices and fire suppression, as well as periodic droughts.

TABLE G-1

POTENTIAL NATURAL COMMUNITIES COMPARED WITH EXISTING VEGETATION IN EL MALPAIS NCA
(rounded to nearest hundred acres)

Potential Natural Communities [a]	Totals	Existing Vegetative Classes [b]			
		Grass-Shrub	Piñon-Juniper	Ponderosa Pine	Lava Complex
Grass-Shrub	101,300	81,900	18,400	900	100
Piñon-Juniper	97,000	15,500	61,700	16,000	3,800
Ponderosa Pine	49,800	8,200	27,200	13,400	1,000
Lava Complex	14,000	500	1,200	3,900	8,400
Totals	262,100	106,100	108,500	34,200	13,300

Notes: [a] Based on data from the Natural Resources Conservation Service (USDA, SCS 1993)
[b] Based on satellite remote sensing data (1994) and Geographic Information Systems analysis

In addition to highlighting areas where management change should be considered, these comparisons provide a baseline for future comparisons.

Ecological Condition

In its Ecological Site Guides, the NRCS describes ecological sites in terms of their potential natural vegetative communities (PNCs)–the mixture of plants that would become established on an ecological site if natural processes were allowed to be completed. For example, a site guide may describe an ecological site's PNC as 20 to 30 percent trees, 50 to 60 percent grasses, 10 to 20 percent shrubs, and 10 to 20 percent forbs.

Comparing the PNC species mixture to the existing plant mixture on a given site provides a measure of that site's similarity to its PNC. This similarity is referred to as "ecological condition." Ecological condition is based on the concept of plant succession. Succession is the orderly process of community change, or the sequence of communities that replace each other in a given area over time as the result of natural processes (e.g,. climate change, fire). Each successional community is referred to as a "seral stage," ranging from Early to Climax. Table G-2 shows the acreage by seral stage in the Plan Area. Table G-3 summarizes the ecological condition of the grazing allotments in the Plan Area.

TABLE G-2

SERAL STAGES IN THE PLAN AREA

Seral Stage	Plan Area Acres	% Similarity to PNC [a]
Early	598	0-25
Middle	107,296	26-50
High	209,697	51-75
Climax (PNC)	0	76-100
Total Acres	317,591	---

Note: [a] PNC-Potential Natural Community

TABLE G-3

ECOLOGICAL CONDITION OF GRAZING ALLOTMENTS WITHIN THE PLAN AREA [a]
(public land acres)

Allotment Number	Allotment Name	Ecological Condition (Seral Stage) [b]		
		Early	Middle	High
201	Cerritos de Jaspe	0	1,753	6,779
202	Bright's Well	0	80	545
203	Malpais	0	57,930	118,659
204	Raney	0	1,582	551
205	Los Pilares	546	862	14,342
206	Little Hole-in-the-Wall [c]	0	794	880
207	Cerro Brillante	0	5,239	17,849
208	Loma Montosa	0	3,907	0
209	Techado Mesa	0	23,063	6,515
210	Los Cerros [d]	0	9,817	36,701
211	Ventana Ridge	0	2,216	6,821
438	Monument Lake	0	2,560	0
439	La Vega	52	53	55
	Totals	598	107,296	209,697

Notes: [a] Allotments #222 (Chical) and #457 (Palomas) shown on Map 2-8 were acquired from the State of New Mexico and have not yet been inventoried.
[b] No allotments in the Plan Area are in the climax seral stage.
[c] Includes 640 acres in the Arrossa Allotment (#226).
[d] Combined allotment created in 1995 to include the former Cerro Chato allotment (#200).